

Notice of Allowability

Application No.

10/642,793

Examiner

Charles E. Cooley

Applicant(s)

OPFER, MARK H.

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 2 SEP 2005.
2. ☒ The allowed claim(s) is/are 1-16.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with James Porcello, Jr. on 21 SEP 2005.
3. The application has been amended as follows:

Amendments to the Specification:

Replace the paragraph at page 4, line 16 with the following amended paragraph:

Referring now to Fig. 1, the centrifugal separator of this invention includes a frame 10, preferably constructed of tubular steel, designed to support the drive motor 12 and clutch 14. In a preferred embodiment, the clutch 14 is a centrifugal clutch, however, other clutch mechanisms are acceptable (i.e. any clutch actuated by air, electromagnetic, etc.). The frame is usually supported by a flat steel table 16. The bowl 18 is supported on the table 16 by rotational bearings 22. The centrifugal bowl 18 has a hollow bowl-shaped body 24 defining an open interior 26 and an interior bowl surface 28. The top edge 30 of the bowl is capped by a top plate 32. The top plate 32 has a hole 34 extending therethrough at the centerpoint defined by an axial centerline about which the bowl rotates. The bottom 38 of the bowl 18 is open. The scraper blade 20 is

Art Unit: 1723

mounted within the interior 26 of the bowl 18 by bearing 36 and rotates about the axial centerline. The drive motor 12 is aligned with the axial centerline of the bowl 18.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) In a centrifugal separator having a centrifuge bowl ~~bowl-shaped-centrifuge~~ defining an interior cavity and an axial centerline; a scraper blade positioned within the interior cavity for rotational movement synchronous with the centrifuge bowl and rotational movement independent from the centrifuge bowl; a shaft member aligned with the axial centerline of the centrifuge bowl, one end the shaft member attached at one end to the scraper blade; a spindle member positioned about a portion of the shaft member and being attached at a first end to the centrifuge bowl, the opposed end of the spindle member and the shaft member both engaged with a clutch member for engaging and disengaging the shaft member with the spindle member; the invention comprising a single drive ~~member~~ motor directly engaged with the opposed end of the shaft member that is in opposition to the end of the shaft member engaged with the scraper blade, the single drive motor being aligned with the axial centerline of the bowl, wherein the direct engagement between the single drive ~~member~~ motor and

Art Unit: 1723

the scraper blade drives the scraper blade independent of the centrifugal bowl to provide the high torque necessary to scrape the interior cavity of the bowl and wherein the clutch member engages to lock the shaft member and spindle member together only when the centrifugal bowl and scraper blade are intended to operate at a synchronous speed.

2. (Currently Amended) The centrifugal separator of claim 1 wherein the drive member motor is a servo motor responsive to the load created by the rotating centrifuge bowl.

3. (Original) The centrifugal separator of claim 1 wherein the clutch member is a centrifugal clutch which engages the spindle member with the shaft member when the shaft member reaches a predetermined threshold speed and disengages if the speed of the shaft member drops below the predetermined threshold speed.

4. (Currently Amended) The centrifugal separator of claim 3 wherein the drive member motor is a servo motor responsive to the load created within the rotating centrifuge bowl and drops the rotational speed below the predetermined threshold speed upon sensing a predetermined load on the centrifuge bowl.

5. (Currently Amended) In a centrifugal separator having a centrifuge bowl, the bowl defining a cavity having an interior surface and an axial centerline, an upper end, a lower end, and an axial centerline wherein the lower end has an opening communicating with the cavity; a hollow spindle connected to the upper end of the bowl in alignment with the axial centerline of the bowl; a scraper located within the cavity of the bowl; a shaft having an upper end and a lower end, the lower end of the shaft engaged with the scraper, the shaft extending through the hollow spindle in alignment with the axial centerline of the bowl; and a clutch member engaged between the shaft and spindle; the invention comprising having the upper end of the shaft directly engaged with a single drive motor aligned with the axial centerline of the bowl such that the drive motor directly powers the scraper blade to provide the high torque necessary to scrape the interior surface of the centrifuge bowl when the bowl is not in motion and further, the clutch member engages the shaft with the spindle when it is desired to rotate the scraper blade and bowl at a synchronous speed.

6. (Original) A centrifugal separator according to claim 5 wherein only the scraper is rotatable within the bowl at or below a predetermined threshold speed for dislodging solids accumulated on the interior surface of the bowl.

7. (Original) A centrifugal separator according to claim 5 wherein both the scraper and bowl are rotatable during a high speed separation operation to substantially separate any solids and liquids.

Art Unit: 1723

8. (Original) A centrifugal separator according to claim 5 wherein the shaft and spindle are mechanically coupled together by a centrifugal clutch during a high speed separation operation so as to prevent relative movement therebetween during the separation operation.

9. (Original) The centrifugal separator of claim 5 wherein the drive member is a servo motor directly engaged with the shaft.

10. (Original) The centrifugal separator of claim 9 wherein the servo motor includes a speed adjustment means responsive to the load within the centrifuge bowl, wherein the motor slows the speed of rotation to disengage rotation of the bowl and initiate a scraping process of the interior surface of the bowl by the continually rotating scraper.

11. (Currently Amended) A method for separating particulate from particulate laden fluid by means of a centrifugal separator comprising the steps of:

initiating power to a drive motor engaged with a an end of a shaft member, the shaft member being directly connected at another end to a scraper blade located within a centrifuge bowl defining an axial centerline; the drive motor being aligned with the axial centerline of the bowl;

accelerating the drive motor speed and shaft speed above a predetermined threshold speed to activate a centrifugal clutch located between a the shaft member and

Art Unit: 1723

a spindle member that is directly connected to the centrifuge bowl, wherein such activation causes the clutch to engage the shaft member with the spindle to cause the bowl to rotate synchronously with the scraper blade;

accelerating the rotating bowl and scraper blade to a predetermined high speed;

injecting particle laden fluid into the bowl to fill the bowl, wherein the particulate suspended in the fluid is forced to the bowl inner interior surface by centrifugal force;

continuing rotation of the bowl and scraper blade to form a layer of particulate on the interior wall;

sensing that the particulate has accumulated to a predetermined thickness;

reducing speed of the drive motor to allow the cleansed fluid to drain from the centrifugal bowl;

stopping the drive motor to stop the bowl and scraper blade rotation;

locking the bowl in a fixed position; and reactivating the drive motor to run at a slow speed with high torque, thereby causing the scraper to rotate within the locked bowl to break up the accumulated particulate.

12. (Original) The method of claim 11 wherein the accumulated thickness of particulate is sensed by a load sensing mechanism.

13. (Original) The method of claim 11 wherein the scraper blade is rotated forward and backyard within the bowl to scrape the accumulated particulate off of the interior surface of the bowl.

Art Unit: 1723

14. (Currently Amended) A method for separating particulate from particulate laden fluid by means of a centrifugal separator comprising the steps of:

initiating power to a drive motor engaged with an end of a shaft member, the shaft member being directly connected at another end to a scraper blade located within a centrifuge bowl defining an axial centerline; the drive motor being aligned with the axial centerline of the bowl;

activating a clutch mechanism to engage to the scraper blade and centrifuge bowl to cause the scraper blade and centrifuge bowl to rotate synchronously;

injecting particle laden fluid into the bowl to fill the bowl, wherein the particulate suspended in the fluid is forced to the bowl inner interior surface by centrifugal force;

continuing rotation of the bowl and scraper blade to form a layer of particulate on the interior wall;

sensing that the particulate has accumulated to a predetermined thickness;

reducing speed of the drive motor to allow the cleansed fluid to drain from the centrifuge bowl;

stopping the drive motor to stop the bowl and scraper blade rotation;

locking the bowl in a fixed position and disengaging the clutch mechanism; and

reactivating the drive motor to cause the scraper blade to rotate within the locked bowl to break up the accumulated particulate.

15. (Original) The method of claim 14 wherein the accumulated thickness of the particulate is sensed by a load sensing mechanism.

Art Unit: 1723

16. (Original) The method of claim 14 wherein the scraper blade is rotated forward and backward within the bowl to scrape the accumulated particulate off the interior surface of the bowl.

* * *

4. The above changes were suggested by the examiner to clarify the orientation of the drive motor with respect to the bowl to define over the prior art of record. Said orientation is clearly depicted in Figure 1 as originally filed.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably **accompany** the Issue Fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles E. Cooley whose telephone number is (571) 272-1139. The examiner can normally be reached on Mon-Fri. All official facsimiles should be transmitted to the centralized fax receiving number 571-273-8300.

Art Unit: 1723

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Charles Cooley", with a stylized flourish at the end.

Charles E. Cooley
Primary Examiner
Art Unit 1723

21 September 2005